

Amendments to the Drawings:

No amendments are made to the Drawings herein.

REMARKS

Claims 1-45 are currently pending and stand rejected under 35 U.S.C. 102(b) as being anticipated by Moseley et al. (U.S. Patent No. 4,995,483) or under 35 U.S.C. 102(a) as being anticipated by Schautt (DE 10156348 C1). Applicant respectfully asks the Examiner to reconsider these rejections in view of the following Remarks.

The present invention is directed to a system for controlling application of an electronically controlled brake which obviates many of the problems associated with prior art brake control systems which rely on undesirable types of sensor feedback in determining when to, and to what extent to, cause actuation of the brake actuator. To this end, all claims require, among other elements, (i) a position sensor which produces a current position signal indicative of a current position a moveable brake component, (ii) a position indicative command indicative of a commanded position of the moveable brake component, and (iii) a brake controller which causes actuation of a brake actuator based at least in part upon a comparison of the position indicative command with the current position signal.

Applicant respectfully submits that none of the prior art cited by the Examiner, either alone or in combination, discloses, teaches or suggests such an arrangement.

With respect to Moseley et al., Applicant acknowledges that this reference does appear to teach the determination of a location of a brake system component and then actuation of the brake based in part upon this sensed location:

...when a brake clamping initiation signal 146 is received in the microprocessor controller 140 and the exact position of the motor rotor is

known by reason of a signal 148 from the rotor position resolver 138, the controller may initiate a rotor revolution count from the "zero" position and then continue counting rotor revolutions until the required brake clamping effort is realized. For example, if the pilot command generates a pedal signal 142 indicative of a requirement for fifty percent of full brake clamping force, the controller will then send a power-on signal 150 to the torque motor 102 which also activates the reciprocating drive mechanism 110 such that the ram member moves into contacting engagement with the brake pressure plate. The pressure plate is moved through the pre-set clearance distance and, the instant that brake clamping is initiated by reason of a clamping force above the load cell threshold, a signal 146 is received in the controller 140 which begins a count of torque motor revolutions until that number of revolutions is reached which provides fifty percent brake clamping force.

(Column 6, lines 16-37).

Thus, position is employed in that once the rotor is in the "zero" position (i.e., when it is sensed that the rotor has contacted the plate), the rotor is engaged for a pre-determined number of revolutions based upon the input force. However, no dynamic positional feedback is provided, as is required by the claims. The system disclosed in Moseley et al. attempts to engage the rotor for a predetermined number of revolutions and then assumes that the rotor has moved the desired number of revolutions. There is no comparison of a position indicative command with a current position signal (i.e., there is no dynamic feedback) as is required by all claims of the present application. Thus, the system disclosed in Moseley et al. suffers from a number of disadvantages. One of such disadvantages is that the "assumption" that the rotor has moved the desired number of revolutions may not be correct. This may occur for a number of reasons, such as wear of system components, dimensional changes caused by heat, the presence of foreign objects (e.g., dirt, debris, moisture, etc.) within the system, and many others. None of these problems are encountered when control

is based on a comparison of a position indicative command with a current position signal, as is required by all claims.

With respect to Schautt, this reference discloses an electromechanical self-boosting brake which includes a device for comparing a setpoint value of a frictional force with the actual value of the frictional force, which device, in the event of a deviation of the actual value from the setpoint value, drives the electric actuator to correspondingly increase or reduce the generated actuation force, and thus approximates the actual value to the setpoint value of the frictional force.

See, for example, Paragraph [0048] which states:

To fully stabilise these unwanted changes of coefficient of friction, the shown disc brake 10 is provided with sensors (not shown), which make it possible to measure the friction force continuously. These sensors, which are known in themselves, are connected to an electronic controller (also not shown), which evaluates the received signals and in particular compares a specified setpoint value of the friction force with the actual value of the friction force. Correspondingly to this evaluation of the signals, the controller controls the drive mechanisms 34, 34' in such a way that by pushing the wedge 18 in or against the direction of rotation of the brake disc 14, the actual value of the friction force is raised or lowered, to bring the actual friction force value to the setpoint friction force value.

Thus, while Schautt does disclose that the actual position of the wedge, the motor and/or the connecting rods can be determined (see Paragraphs [0032] and [0049]), there is no disclosure, teaching or suggestion whatsoever that a setpoint value for the position of any of these components can be calculated, and/or that a position indicative command be compared with a current position signal. Schautt, instead, discloses a system which operates in a very similar manner to the prior art discussed in the background (i.e., one which employs frictional force as a means to control brake application). However, as set forth in the Background section of the present application, controlling the electric actuator based upon feedback indicative of the frictional force is disadvantageous for a number of reasons.

With respect to the additional references mentioned by the Examiner, while some of these references do include position sensors, none of them use the sensed position to actuate a brake actuator. Some use some other sensed dynamic feedback (such as frictional force) to control actuation of a brake actuator, while others simply do not disclose the use of any type of dynamic feedback to control actuation of a brake actuator.

Applicant is not aware of any reference, including all those cited to date in connection with the present application, that discloses, teaches or suggests in any way controlling actuation of a brake actuator based at least in part upon a comparison of a sensed current position a moveable brake component with a commanded position of the moveable brake component, as is required by all pending claims.

For the foregoing reasons, Applicant respectfully submits that all pending claims, namely Claims 1-45, are patentable over the references of record, and earnestly solicits allowance of the same.

Respectfully submitted,



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